The number of backyard poultry is increasing as more people own chickens for either companionship or small-scale meat and egg production, and as more municipalities allow urban and suburban chicken ownership. Avian practitioners are increasingly being asked to care for backyard poultry and are seeking practical information on husbandry, medicine, and surgery in order to provide state-of-the-art medical care for their patients. The diseases and care of backyard flocks are different than that of commercial broilers, breeders, or layers, and the following is an overview of the how to identify and treat some of the most commonly encountered infectious diseases of backyard poultry.

**Top 10 Infectious Diseases**

1. **Coccidiosis**

Coccidiosis is caused by coccidia, a protozoan organism. There are many species (nine in chickens, seven in turkeys, at least four in quail) and they are host-specific and not zoonotic. In other words, a chicken cannot infect a turkey and vice versa. A flock may develop resistance to one species only to be infected with another species. Cecal coccidiosis is worse in that it typically causes bloody droppings and is associated with higher mortality, whereas intestinal coccidiosis is typically more chronic in nature and is associated with a lower mortality. The clinical signs of coccidiosis are severe in young (4–16 weeks of age) chickens by having bloody diarrhea, pale combs, lethargy, tendency to huddle, partial anorexia, weight loss, dehydration, and death. Owners generally report diarrhea, unthriftness, and variable levels of mortality. As chickens get older, they become more resistant and show little to no clinical signs, but can act as carriers to later expose young chicks. Transmission is through direct or indirect contact with droppings from infected birds (fomites, free-flying birds, insects, and rodents). The oocysts shed in feces are not immediately infective; they have to first go through a maturation phase (sporulation), which can take as little as one to three days in warm, damp litter. The disease is most common in the springtime. Diagnosis is based on a fecal float. There are many species of coccidial with varying areas of the intestine affected and various clinical signs. *Eimeria tenella*, the cecal coccidian, is one of the most common species and is associated with bloody droppings, and shows a typical hemorrhage of the ceca on histopathology. The other species (*E. acervulina* and *E. necatrix*) affect the intestine and are less severe. The key is prevention. Wet litter, poor
sanitation, poor nutrition, and concurrent immunosuppressive diseases are the most common triggers of a coccidiosis outbreak. Treatment is with a coccidiostat such as amprolium or sulfamethazine. The best recommendation is to prevent the disease by feeding medicated feed between the ages of zero and 16 weeks. Commercial broilers don’t typically live long enough for this disease to be enough of a problem. There is a coccidia vaccine available for use in one to three-day-old chicks, but it is only useful in certain poultry operations since it uses live organisms and reingestion at 4–25 days is necessary as a booster.

2. Marek’s Disease

Marek’s disease affects only chickens. The causative agent is a herpesvirus. Clinical signs are generally seen in birds that are 12–20 weeks of age, but can be seen as young as three to four weeks of age. This highly contagious disease is associated with a high morbidity and low mortality. The incubation period is typically 4–12 weeks; clinical signs are seen in 10–12-week-old chickens. Transmission is via virus shed in skin and feathers, secretions, and droppings. The virus can persist in the environment indefinitely (feathers and dander in poultry houses and yards). Clinical signs include an asymmetrical paralysis since the virus affects the sciatic nerve. A typical clinical sign is a bird that cannot stand because one leg is pointed forward while the other leg is pointed backward. Another typical clinical sign of the ocular form is “gray eye” where the color of the iris gradually changes from brown to gray and the pupil becomes irregularly shaped. There is no treatment. Prevention is by administering a polyvalent vaccine in the egg or after hatching at one day of age. Understand that no vaccine is 100% protective and that vaccine administration may not be 100% at the hatchery since it is typically a spray on vaccine as the chicks go by on the conveyor belt. Marek’s disease must be differentiated from lymphoid leucosis based on age of clinical signs and gross and histopathological lesions (sciatic nerve enlargement).

3. Infectious Bronchitis Virus (IBV)

Infectious bronchitis virus, caused by a coronavirus, affects only chickens and has a worldwide distribution. Younger, immunosuppressed chickens show worse clinical signs than older, immunocompetent chickens. Clinical signs include upper respiratory signs
including sneezing, gasping, rales, and nasal discharge. Young are affected worse than adults, showing gasping and labored breathing. In an affected flock of chicks, all birds will typically develop clinical signs within 36–48 hours and the clinical disease will typically last approximately four days (longer if secondary infections develop). Older chickens show a 5%–10% drop in egg production for about 10–14 days. The reproductive tract can also be affected by this virus resulting in irregular and roughened eggshells with watery albumin and decreased egg production. Also, newer strains may affect the kidneys. Tests include virus neutralization, hemagglutination inhibition, or enzyme-linked immunosorbent assay (ELISA). The best method to control is to disinfect, repopulate, and use live vaccine. This disease is highly contagious and easily spreads via airborne particulate matter and via fomites. There is no treatment, but antibiotics can be given to prevent secondary bacterial infection, especially with Infectious Coryza. The virus is easily destroyed by disinfectants, sunlight, and heat. Increasing the environmental brooder temperature by five degrees Fahrenheit helps chicks to recover. There is a vaccine available, but it is not used in backyard flocks since there are numerous serotypes.

4. Infectious Coryza

Infectious coryza affects mainly chickens (it can affect pheasants and guinea fowl as well). The causative agent is *Haemophilus paragallinarium*, a Gram-negative rod. The incubation period is one to three days and the course of the disease is approximately 4–12 weeks. Clinical signs include upper respiratory signs and swelling of the face with foul smelling (hallmark) and sticky nasal and ocular discharge, dyspnea, and rales. Clinical signs also include decreased egg production. Birds that recover are lifetime carriers. Transmission is through direct or indirect contact. Mortality is about 20%–50%. Treatment consists of giving antibiotics such as sulfa drugs, erythromycin, or tetracycline, but since affected birds are lifetime carriers, the only way to control the infection is through depopulation and leaving the premises vacant for at least 30, preferably 60, days after cleaning and disinfecting before repopulating. Avoid mixing flocks or mixing different ages and sources of birds. There is a vaccine available, but it is seldom used in backyard flocks.
5. Fowl Pox

There are many species of poxvirus. The Fowl Pox virus affects chickens, turkeys, and quail. Clinical signs include erosive, proliferative scabs on the exterior surface of the face and feet in the form of the disease called dry, or cutaneous, pox. When there are ulcerative and proliferative lesions in the oropharynx and tracheal area, it is called wet, or diphtheritic, pox and it is associated with much more severe clinical signs such as difficulty breathing and swallowing and can cause death. Histopathologically, intracytoplasmic inclusion bodies (Bollinger bodies) are seen in infected skin or mucosa. Transmission is through mosquitos or broken skin (conspecific pecking, etc.). The disease can also be spread by ingestion of the virus in scabs that infect food, etc. The virus is highly resistant to drying and may survive months to years in the dried scabs. Inhalation of pox virus has also been shown. There is no specific treatment. Antibiotics can help with any secondary infection that occurs. There is a live quail pox vaccine available that can be used during an outbreak to prevent further spread since the disease spreads slowly through a flock.

6. Avian Influenza

Avian influenza affects many species. The causative agent is an Orthomyxovirus. It is also known as “Fowl Plague.” The clinical signs are variable since there are mild and highly pathogenic forms, but include anorexia, decreased egg production, and respiratory disease in the mild form and respiratory distress, facial swelling, diarrhea, and neurological signs with the highly pathogenic form. Usually, the mild form of the disease is associated with high morbidity and low mortality. Basically, coughing, sneezing, and sudden death are the typical signs of this disease. This a highly contagious disease associated with high mortality of both domestic and wild birds. There is no treatment. Testing usually involves virus isolation. This is a reportable disease. A killed vaccine is available, but not used in backyard flocks. Depopulation is usually the recommended action during an outbreak and the disease should be reported to the state veterinarian.
7. External Parasites

External parasites such as mites and lice are common in poultry. Prevention, checking your flock periodically for external parasites, and treating early helps prevent a larger flock outbreak. Fall and winter are the most common times to see a louse problem. The lice are big enough to see with the naked eye and they move fast in comparison to mites. Nits (louse eggs) are laid in clumps at the base of feathers along the ventrum. Treatment of lice and mites consists of carbaryl powder, pyrethrin powder, or ivermectin. Follow label directions for withdrawal times in food-producing poultry. If selling the eggs commercially, sometimes the only allowed treatment is diatomaceous earth. Poultry lice and mites are host specific and are not zoonotic.

Northern Fowl Mite (feather mite, related to the tropical fowl mite) *Ornithonyssus sylvarium*: The northern fowl mite is the most common external parasite in poultry, especially in cool weather climates. This mite spends its entire life cycle (egg to larva to nymphal stage to adult) on the chicken, which can take as little as a week in ideal conditions. Clinical signs of this mite infestation include soiled feathers around the vent, tail, and rear legs. Mites are commonly first discovered or seen on eggs. Heavy infestations can cause decreased egg production. Barely seen with the naked eye, the adults are a dark red to black color and evidence of mites and eggs can be seen as a dark area at the base of feathers in the ventral regions (vent, ventral coelomic area, tail, ventral cervical area). Light colored birds may have a darkening of the feathers from a build-up of mite feces. Diagnosis is based on typical clinical signs, seeing the mite grossly, or performing a tape prep of an affected area and examining for mites under the microscope. Mites can be transferred via fomites including crates, cages, clothing, and wild birds.

Chicken Mite (the bad one, red roost mite) *Dermanyssus gallinae*: This is the mite that feeds on poultry at night and then remains secluded during the day within the poultry house, making diagnosis difficult. This mite can live off the bird for two to three weeks. The life cycle can be completed in as little as seven to ten days with ideal conditions. Clinical signs include mild weight loss and decreased egg production. The mite is best seen using a magnifying glass and inspecting the birds and house at night.

Lice -- (body louse) *Menacanthus stramineus*: There are various species of louse that affect chickens and more than one species can be on a chicken at one time, but the body louse is one of the most common. There is a face louse and also a feather (quill) louse that lays its eggs on the shaft of the feather at the base. A heavy infestation of the
body louse can cause a decrease in egg production. Clinical signs include hyperemia and irritation of the skin of affected birds with small scabs and clots. A moth-eaten appearance of the feathers may be seen. The lice feed mainly on skin fragments and feather debris on the surface of the skin, but can also feed on the blood inside of blood (pin, quill) feathers; otherwise, they do not suck blood since they are chewing lice. They spend their entire life cycle on the chicken. Lice are easily seen with the naked eye and are yellowish in color and flat bodied. Under the microscope their big head with chewing mouth parts can be seen since they are chewing lice.

Bedbugs—*Cimex lectularius*: Recently, a henhouse was found to be infested with bed bugs and the hens were showing clinical signs of small, hard, white welts on the skin, which became inflamed and pruritic. The bed bugs live in the cracks of the henhouse and come out to feed on the chickens at night. Diagnosis is based on grossly identifying the reddish-brown, oval to tear drop shaped, flattened bugs that are about 1/4 to 5/8 inch in length.

**8. Newcastle Disease**

Newcastle disease affects many species of birds. The causative agent is a Paramyxovirus. There are four different forms that vary in severity. The least pathogenic form is the Lentogenic form, which causes a mild upper respiratory disease and usually only affects the young. The mesogenic form also causes a mild upper respiratory disease, decreased egg laying, and has a low mortality. The Neurologic/velogenic form causes a sudden onset of upper respiratory disease followed by neurological signs with approximately 50%–90% mortality. The worst form, which is a foreign animal disease for the United States (U.S.), is the “Exotic Newcastle Disease” (END), also known as the viscerotropic velogenic Newcastle Disease (VVND) form that is associated with neurological signs and high mortality. In the U.S., there is a vaccine for the first three forms listed here, but in the U.S. we do not vaccinate against END; it’s reportable, and we test for it and eradicate it since it is a foreign animal disease. There is a serology test available at California’s San Bernardino County Laboratory for PMV one, two, and three. Paramyxovirus causes many different kinds of Newcastle disease, which are mostly mild diseases in poultry and they are vaccinated at one day of age; it causes mild conjunctivitis in people and can be tested for at U.S. quarantine stations. END (also known as VVND) is a foreign animal disease and millions are spent to eradicate all
exposed birds when there is an outbreak in the U.S. (the last one was in California, 2002/2003—3.5 million birds were euthanized to stop the spread).

9. Mycoplasmosis

There are three different species of Mycoplasma that can infect chickens. *Mycoplasma gallisepticum* causes respiratory disease in chickens, but an infectious sinusitis in turkeys. *Mycoplasma meleagridis* causes an air sacculitis and skeletal deformities in turkeys. *Mycoplasma synoviae* causes air sacculitis and synovitis /lameness in chickens. *Mycoplasma gallisepticum* (MG) is seen in backyard flocks and is of concern because it can easily spread to nearby commercial flocks and cause economic devastation for that commercial flock. Most commercial flocks are MG-free. To participate in the National Poultry Improvement Plan (NPIP), a flock needs to be MG-free. Transmission is through fomites. Clinical signs of MG in chickens include an upper respiratory disease with swelling of the infraorbital diverticulum of the infraorbital sinus with caseated pus. The best prevention is to depopulate and repopulate with clean stock. Treatment can be attempted with antibiotics (spectinomycin, lincomycin, erythromycin, or tylosin), but birds remain carriers for life.

10. Infectious Laryngotracheitis (ILT)

Infectious laryngotracheitis affects only chickens (and pheasants). The causative agent is a herpesvirus. Chickens older than 14 weeks are more affected than younger chickens, so the disease is usually seen in mature chickens. There is a mild form in the U.S. that is associated with decreased egg production, conjunctivitis, nasal discharge, swollen infraorbital sinus, and, in more severe cases, moist rales. Shaking of the head and flinging necrohemorrhagic material from the trachea is a hallmark of this disease including an inspiratory dyspnea and death. At gross necropsy, a mucoid to necrohemorrhagic tracheitis is present. Diagnosis is confirmed via virus isolation, ELISA, or indirect fluorescent antibody test. Prevention is through the use of a live vaccine. The disease can be spread by fomites. Properly dispose of dead birds to prevent spread (incinerate). Antibiotics can be used, but it is better to depopulate and then vaccinate new birds.
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